

## CLAIMS

1. A hydration monitor comprising a temperature sensor for measuring a subject's core body temperature and a processor, the processor being arranged to  
5 accept measurements from the temperature sensor and calculate a hydration level in dependence on changes in the measured core body temperature.
2. A hydration monitor as claimed in claim 1, comprising an earpiece and a  
10 remote unit, the temperature sensor being positioned in the earpiece for measuring the core body temperature via the subject's tympanic membrane.
3. A hydration monitor as claimed in claim 2, wherein the temperature sensor comprises a thermopile.
- 15 4. A hydration monitor as claimed in claim 2 or 3, wherein the earpiece further comprises a transmitter, the remote unit including the processor, output means and a receiver, the earpiece being arranged to communicate measurements to the processor via the transmitter and receiver, the processor being arranged to provide an indication of the hydration level via the output means.  
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5. A hydration monitor as claimed in claim 4, wherein the transmitter and  
reciever communicate wirelessly.
6. A hydration monitor as claimed in claim 4 or 5, wherein the transmitter and  
25 receiver are transcievers.
7. A hydration monitor as claimed in any of claims 4 to 6, wherein the remote  
unit comprises a selected one of:  
a wristwatch, a personal digital organiser, a mobile telephone, a personal  
30 computer or medical diagnostic and/or monitoring apparatus.
8. A hydration monitor as claimed in any of claims 4 to 7, wherein the output  
means includes one or more of a display and a speaker.

9. A hydration monitor as claimed in any preceding claim, further comprising a memory for storing hydration level and/or core body temperature over time.
10. A hydration monitor as claimed in any preceding claim, wherein the processor is arranged to determine a hydration level by the following formula:  
5 [(core body temperature current - core body temperature normal) x subject's weight] / (factor of ambient compensation x 100).
11. A hydration monitor as claimed in claim 10, wherein the factor of ambient compensation is between 0.1 and 0.23 and is determined in dependence on the  
10 temperature of the environment surrounding the subject.
12. A hydration monitor as claimed in any preceding claim arranged to operate repeatedly at predetermined time intervals.
13. A hydration monitor as claimed in any preceding claim, wherein the processor is arranged to generate an alarm upon determination of a hydration level below a predetermined level.
14. A method of measuring hydration of a subject comprising the steps of:  
20 measuring an initial core body temperature of the subject;  
measuring a subsequent current core body temperature of the subject;  
subtracting the initial core body temperature from the subsequent core body temperature;  
25 multiplying by the subject's weight; and,  
dividing by a factor of ambient compensation.
15. A method as claimed in claim 14, wherein the measurements are taken from the subject's tympanic membrane.
16. A hydration monitor as herein described and as illustrated in the accompanying drawings.

17. A method as herein described and as illustrated in the accompanying drawings.